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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/806,252	03/27/2001	Gavriel J. Iddan	001/02093	5443

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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT PAPER NUMBER

2622

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/806,252	Applicant(s) IDDAN ET AL.	
	Examiner LUONG T. NGUYEN	Art Unit 2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/08/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 6-27 is/are pending in the application.
- 4a) Of the above claim(s) 7-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6 and 23-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The allowable of claims 5-26, as indicated in Office Action mailed on 1/12/2006 has been withdrawn due to the newly founded reference to Vietze et al. and an alternative interpretation. The Examiner apologizes for the withdrawn of Office Action mailed on 1/12/2006. However, for further consideration, a replacement Non-Final Office Action sets forth below.

Election/Restrictions

2. Applicant's election with traverse of Species I, Figures 1A-1D in the reply filed on 1/14/2005 is acknowledged.

3. Claims 7-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 1/14/2005.

(Note that claims 7-22 previously withdrawn from consideration as a result of a species election requirement as indicated in Paper mailed on 6/17/2005. Claims 37-41 are canceled by the Amendment filed on 10/17/2005. Claims 2, 5, 28-36 are canceled by the Amendment filed on 6/8/2006).

Claim Objections

4. Claims 1, 3, 4, 6, 23-27 are objected to because of the following informalities:

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Claim 1 (line 4), "thereon" should be changed to --thereon;--.

Claim 1 (line 7), "inside the pixel" should be changed to --inside each of the plurality of pixels--.

Claim 3 (line 1), claim 7 (line 4), claim 7 (line 5), claim 7 (line 7), claim 7 (line 8), "the amplifier" should be changed to --the at least one amplifier--.

Claim 24 (line 2), "a pixel" should be changed to --the pixel--.

Claims 3, 4, 6, 23-27 are objected as being dependent on claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yahav et al. (U. S. Patent No. 6,057,909) in view of Vietze et al. (SPIE Vol. 2654).

Regarding claim 1, Yahav et al. discloses a 3D camera for determining distances to regions in a scene (optical ranging camera 110 or 240 produces a three-dimensional digital image, Column 12, Lines 22-35, Figures 10, 17A) comprising:

a photosurface (detector matrix array 241, Figure 17A, Column 25, Lines 5-15) having plurality of pixels (plurality of detector elements 242, Figure 17A, Column 25, Lines 5-15) each of which comprises a circuit having single light sensitive element that provides a current

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responsive to light incident thereon and wherein the circuit is controllable to modulate or gate the current (each detector element 242 provides a current in response to light incident thereon, and is controlled by controller 126 and video processor 116, Figure 17A);

a light source (light source 40, Figure 17A, Column 12, Lines 52-60);

a controller that controls the light source to illuminate the scene with gated light (controller 126 controls light source 40 to illuminate scene 26 and light modulator 44 to modulate the illumination of scene 26, Figure 17A, Column 25, Lines 17-28, Column 12, Line 60- Column 13, Line 7) and opens and closes the at least one gate switch to gate current from the light sensitive element of a pixel in the photosurface responsive to the time dependence of the gating of the light and determines a distance to a region imaged on the pixel responsive to the gated an amount of charge (controller 126 controls shutter array 244 so that each shutter element 246 individually modulates the reflected light from scene 26 reaching each detector element 242; different shutter elements 246 may be modulated to open and shut at the same time or different times, thus, each detector element 242 has its own distance window associated therewith depending on the modulation of the corresponding shutter element, Figure 17A, Column 25, Lines 17-28). Note that shutter array 244 is a liquid crystal shutter array (Column 25, Lines 11-13).

Yahav et al. does not disclose at least one amplifier inside the pixel, having an in put and an output; a feedback capacitor separate from the light sensitive element connected between the input and output of each of the at least one amplifier; and at least one gate switch through which current flows from the light sensitive element into the input of the at least one amplifier.

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However, Vietze et al. teaches a single offset pixel, which includes an amplifier, a feedback capacitor C_i , a gate switch P_{clk} (figure 3, SPIE Vo. 2654, pages 95-96). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a an on-chip charge integrator readout in the device in order to retain full dynamic range of the photodetector for the AC-part of the signal (see Summary, SPIE Vo. 2654, page 98).

Regarding claim 3, Vietze et al. discloses the amplifier is an operation amplifier (operation amplifier, figure 3).

Regarding claim 4, Vietze et al. discloses wherein the circuit comprises at least one data bus (a bus is connected to output of operation amplifier for reading out V_{out} , figure 3). Yahav et al. and Vietze et al. do not disclose at least one address switch that connects a data buss of the at least one data buss to an output of one of the at least one amplifier, either directly or via another switch. However, Official Notice is taken that it is well known in the art to include such address switch to the device in order to individually select each pixel for reading out.

Regarding claim 6, Vietze et al. discloses a single gate switch that connects the light sensitive element to the amplifier (a gate switch M_p (figure 3, SPIE Vo. 2654, pages 95-96).

Regarding claim 23, Vietze et al. discloses a reset switch (reset switch M_{cur} , figures 3-4).

Regarding claim 24, Yahav et al. discloses before the controller gates a pixel on, the controller closes and opens the reset switch of the pixel at least once so that voltage across the light sensitive element is the same each time the pixel is gated on (processor 116 controls the plurality of detector elements 242, figure 17, column 25, lines 5-35).

Regarding claim 25, Vietze et al. discloses the controller gates at least one pixel in the photosurface independently of other pixels in the photosurface (the offset current at each pixel's photosite can be programmed individually, see Abstract).

Regarding claim 26, Yahav et al. discloses pixels in the photosurface are grouped into different pixel groups and pixels in a same pixel group are gated on and off by the controller simultaneously and wherein each pixel group is controlled independently of other pixel groups (the detector element 242 can be groups into group of elements 242, super-pixel, column 25, lines 5-58).

Regarding claim 27, Yahav et al. discloses the controller controls the light source to illuminate the scene with a plurality of light pulses (waveform 60, Figure 3, Column 14, Lines 50-67), each having a pulse width (pulse width T, Figure 3), and wherein the controller gates pixels in the photosurface on or off at times coordinated with times at which light pulses of the plurality of light pulses are radiated (controller 126 controls shutter elements 246 to modulate to open and shut at the same time or different time, Column 25, Lines 21-28).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DAVID L. OMETZ can be reached on (571) 272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
06/15/06

Luong T. Nguyen

**LUONG T. NGUYEN
PATENT EXAMINER**